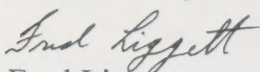


Hi Eric,

7/24/2000

Enclosed are copies of the HME press manufactured by Cincinnati Milacron, formerly Cincinnati Milling Machine Co. before the name change in the early 1960's. I also included copies of some photographs taken at the Mint in England in 1965 when the Churchill crowns were struck. As I recall, Eva Adams was visiting the mint in anticipation of purchasing new coin presses for the U.S. mint.

Best Wishes,

A handwritten signature in cursive script that reads "Fred Liggett".

Fred Liggett

4956 Wild Daisy Lane

Venice, Fl. 34293





# HME Knuckle Press and Coinmaster Minting Machine





# ..... Knuckle Press and Coinmaster Minting Machine



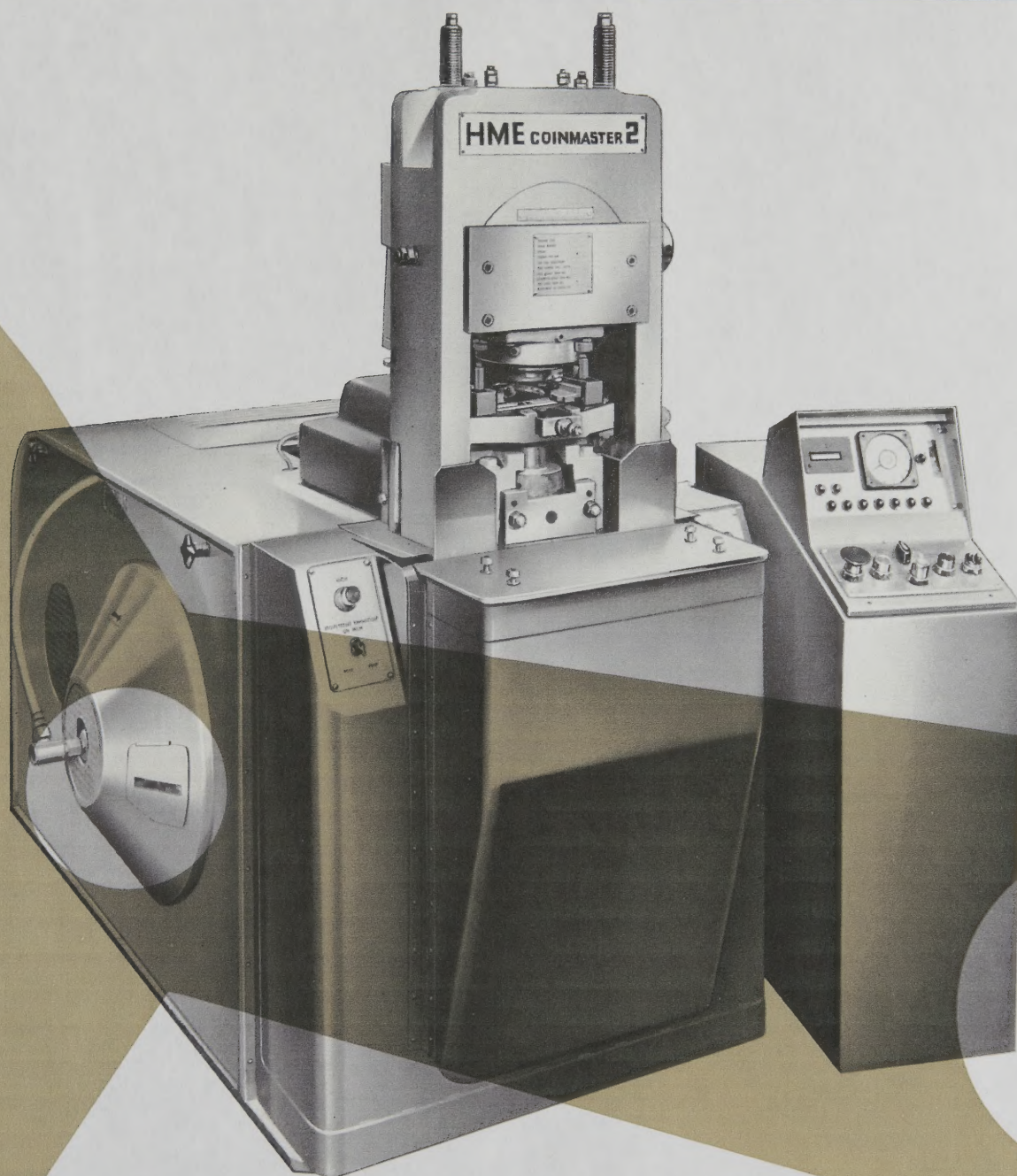
## Knuckle Presses

HME Knuckle Presses are available in four sizes – 100, 180, 360 and 600 tons capacity – and offer a different approach to a wide variety of coining, embossing, forming and sizing operations. All

feature the Knuckle Action principle for fast, consistent production and combine the advantages of high tonnages with greater ease of operation. Efficient processing of a wide range of components and materials at optimum speeds is the keynote of Knuckle Press design. In many cases, especially where the optional multi-strike feature is incorporated, the number of operations can be reduced to show substantial savings in tooling and production costs. Frame construction is compact, the design minimises deflection through equal distribution of load, whilst long

phosphor-bronze slideways ensure accurate alignment of dies and components. Lubrication to the slideways and all other bearing surfaces is provided by an enclosed, fully automatic system. All Knuckle Presses feature push-button control of machine functions as an aid to simple operation. These controls include single stroke or continuous running selection and an "inching" control for set-up purposes. Friction clutch and brake mechanisms assure positive response to the controls and speedy, efficient operation under all conditions.





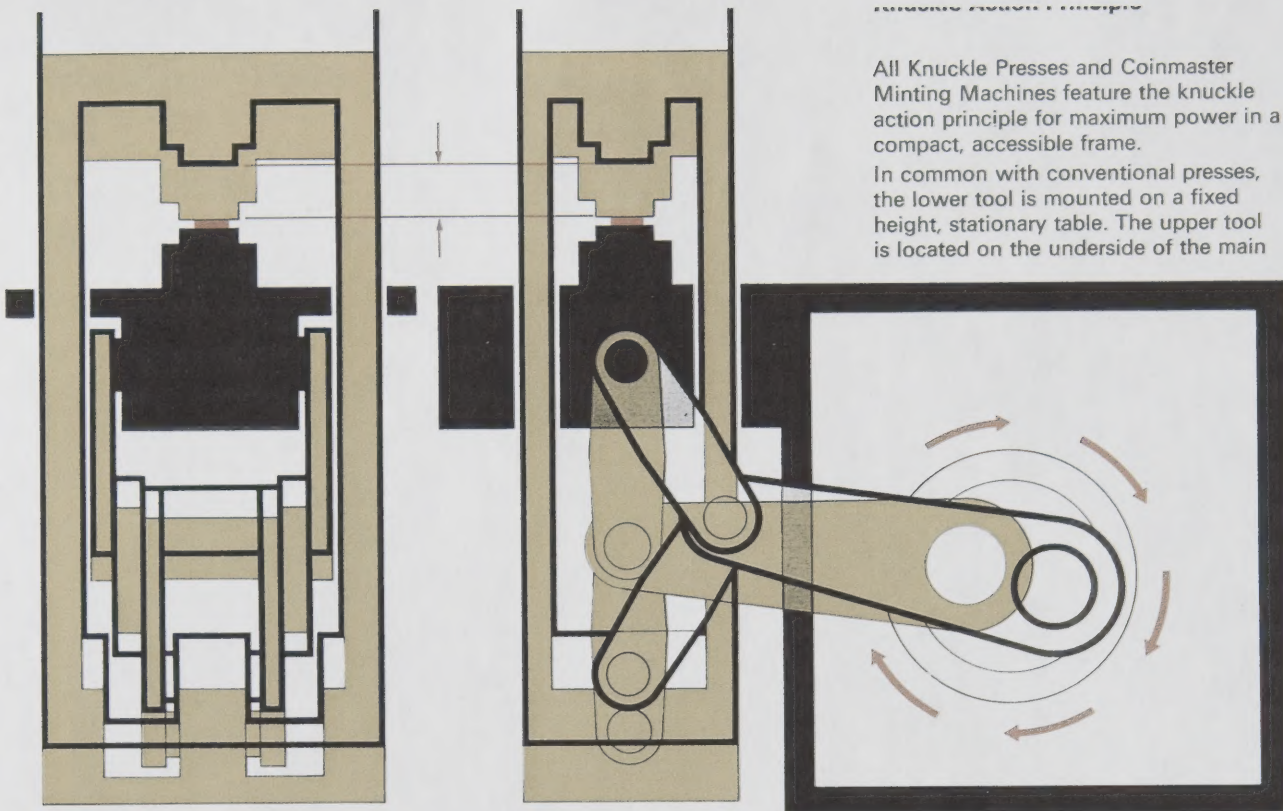
### Coinmaster Minting Machines

Coinmaster Minting Machines are specially designed to produce coins at fast production rates and to the high

degree of accuracy and consistency of definition demanded by the Mints of the world. Three machine sizes provide a choice to suit specific requirements. The No. 1 machine handles coins up to  $1\frac{1}{8}$ " (28,5 mm) diameter at speeds up to 300 strokes per minute, the No. 2 machine coins up to  $1\frac{3}{8}$ " (33,3 mm) diameter at up to 200 strokes per minute and the No. 3 machine coins up to  $1\frac{3}{4}$ " (44,4 mm) diameter at speeds up to 120 strokes per minute. All Coinmasters embody many practical features specially developed to fulfil the requirements of accurate, high speed

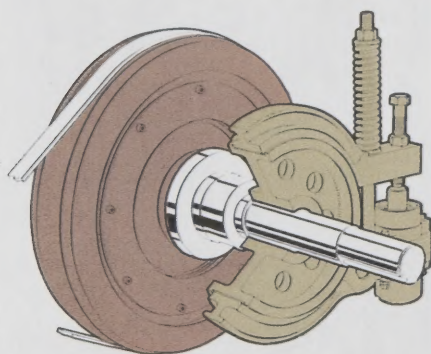
minting – dial feed for fast positive loading of blanks, variable speed drive to ensure optimum production rates on any coin, safety interlocks to protect the machine and dies in the event of a blank misfeed. A separate control console houses selectors for single stroke or continuous running and push-buttons, including an "inching" facility, for ease of operation and set-up. A compact frame fabricated entirely from steel houses the knuckle joint actuated slide and air balance mechanism, the friction clutch and brake and long phosphor-bronze slideways.





All Knuckle Presses and Coinmaster Minting Machines feature the knuckle action principle for maximum power in a compact, accessible frame.

In common with conventional presses, the lower tool is mounted on a fixed height, stationary table. The upper tool is located on the underside of the main



#### Clutch and Brake

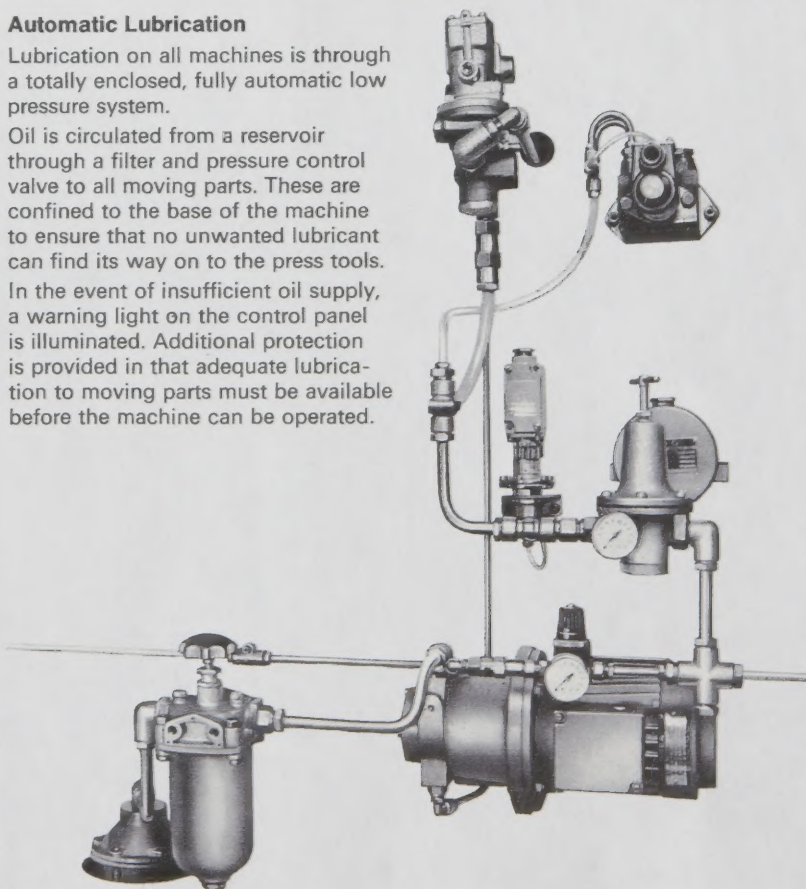
Main press drive is obtained through a specially designed Friction Clutch which permits high production rates to be achieved. A self-centring single plate unit with a low air consumption, it requires a minimum of maintenance for long, trouble-free service. Complementary to the clutch is a powerful, servo-assisted brake which is air expanded during press operation and which can be simply adjusted for wear. The whole unit can be selected to run continuously, set to single stroking for manual loading, and "inched" to facilitate toolsetting.

#### Automatic Lubrication

Lubrication on all machines is through a totally enclosed, fully automatic low pressure system.

Oil is circulated from a reservoir through a filter and pressure control valve to all moving parts. These are confined to the base of the machine to ensure that no unwanted lubricant can find its way on to the press tools.

In the event of insufficient oil supply, a warning light on the control panel is illuminated. Additional protection is provided in that adequate lubrication to moving parts must be available before the machine can be operated.



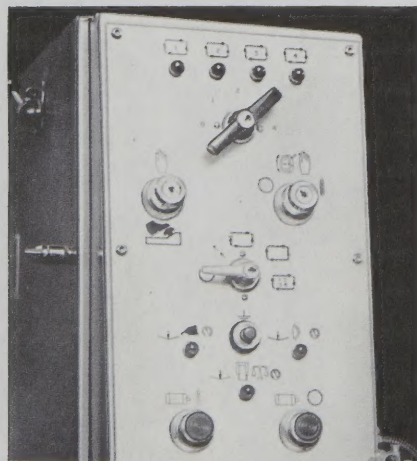
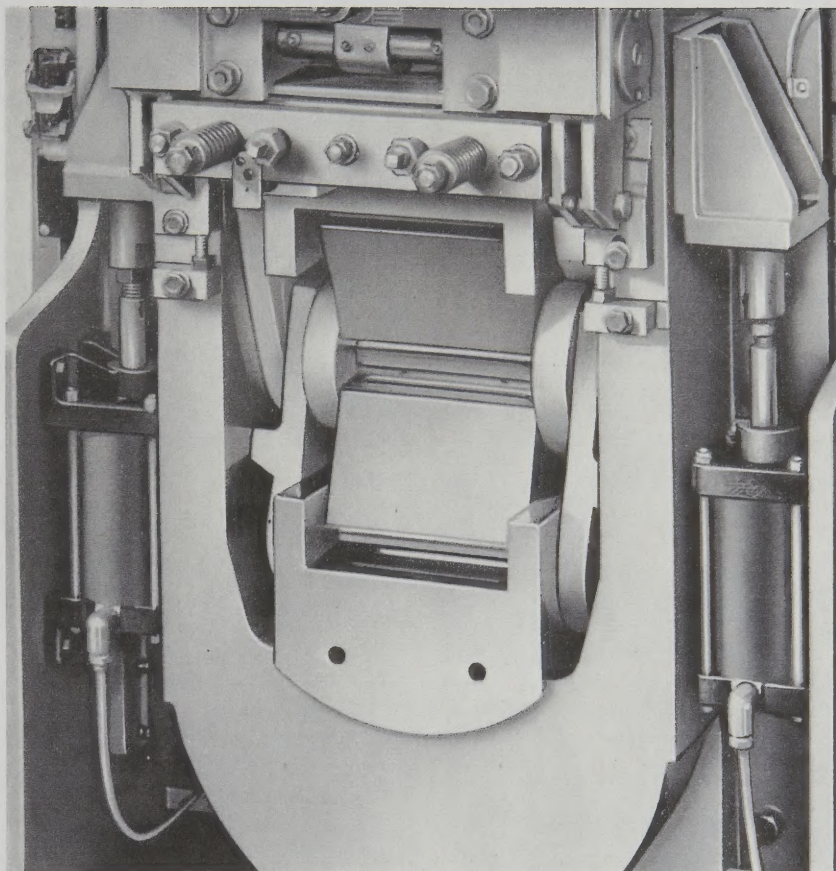


slide. The upper knuckle journal is connected to the fixed table and the lower journal to the main slide, both pivoting around the connecting rod. Starting at top dead centre, i.e. the slide is in its uppermost position, the flywheel rotates and the knuckle is gradually forced open to initiate downward movement of the slide. At the point where the upper and lower journals are almost in line, the dies close and a powerful squeezing force is exerted. Further flywheel rotation opens the dies and the slide returns to its top position in readiness for the next stroke.

Additional benefits of the design are accessibility and simplified routine maintenance. All loads are contained within the box-type slide, ensuring consistency of sizing and minimizing impact loadings on the floor.

#### Slide Guideways

Extremely long bearing guides provide rigid support for the slide to promote accurate die alignment, leading to greater accuracy and longer tool life. Air balance cylinders alongside the guides assure smooth, backlash-free operation. The guides and air balance cylinders are clearly visible in our illustration in which the front guard has been removed.



#### Multi-strike Feature

Where applications require an extra high degree of detail and finish and/or deep impressions it is often desirable to strike a blank more than once. HME's multi-strike feature permits selection of the number of strokes required up to a maximum of four, after which the machine automatically completes the desired number of strokes before the finished product is ejected from the die. Advantages of the system are that component handling is kept to a minimum and that only one set of dies is required, two important cost saving benefits.

For proof coining and like operations hand loading is preferable so that the possibility of damage from mechanical

production rates are required, special feeding equipment can be fitted to Knuckle Presses, while a modified dial feed arrangement can be employed on Coinmaster Minting Machines. In the latter case, the number of strikes selectable is either one, two or four.

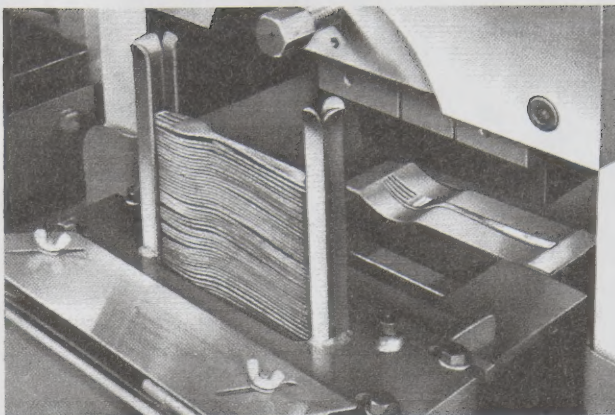
Multi-strike is available only as original factory fitted equipment on Coinmaster machines. For Knuckle Press applications, the facility can also be fitted to existing machines.



# Applications

Knuckle Presses process a wide variety of components and materials requiring coining, embossing and similar high tonnage operations. Ideal for the attachment of all types of automatic feeding mechanism, and designed for convenient hand loading, they have applications throughout industry.

Typical components processed on Knuckle Presses are illustrated here.



This magazine is feeding fork blanks into a Knuckle Press. Other types of cutlery – including spoons – and scissors can also be fed in this way.

## Keys

Magazine loading and automatic feeding enable 45 of these brass key heads to be coined every minute on a 100 ton knuckle press.



## Rocker Arm

A pressure of 80 tons was required to size the bearing surfaces of this automobile rocker arm in a single operation.



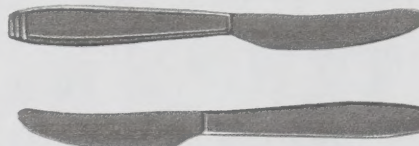
## Rotor Impeller

This component is produced in one blow from a flat copper blank. Pressed on K360 or K600 ton machines depending on part size, this results in extensive savings in production time and material costs.



## Knives

Coining or embossing patterns on knife handles are ideal operations for Knuckle Presses. The ones illustrated, in stainless steel, require a pressure of approximately 250 tons and are processed on a 360 Knuckle Press.



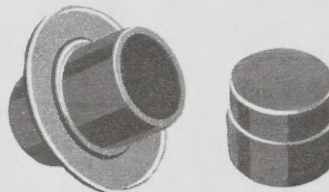
## Spoons

The handle of this nickel silver dessert spoon is coined in one operation on a K360 Press.



## Electrical Connector Body

One blow at approximately 300 tons produces a finished part from an aluminium slug. Material costs and production times are considerably reduced.



## Scissors

A pressure of 320 tons is required to coin the whole scissor from blank stock.



## Pliers and Adjustable Spanners

Embossing handles, coining edges and sizing heads are operations successfully completed on tools like pliers and adjustable spanners.



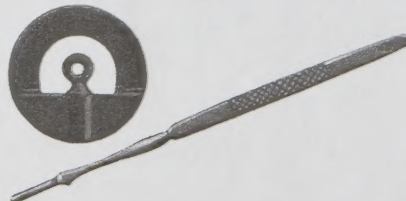
## Drop Arm Forging

The bearing surfaces of this drop arm forging are sized in one operation at a pressure of 220 tons.



## Vernier Protractor

A 100 ton Knuckle Press is used to coin the graduations on this Vernier Protractor.



## Surgical Instruments

Coined in one operation from the blank, these nickel silver components require a pressure of approximately 270 tons.



## Gearbox Shifter Fork

Sizing the fork ends of this brass gearbox shifter fork requires a pressure of 80 tons. In most cases this type of operation is more economical than the slower, conventional milling process.



## Badges

To replace die-casting, these badges are produced in one blow from flat aluminium strip. The load is 400 tons on a K600 machine.





# Coinmaster Applications

Coinmaster Minting Machines are playing a major part in the production of coins all over the world. The coins shown here are from just some of the countries with whose production Coinmasters are associated.

## Tanzania

Tanzania, formed from Tanganyika and Zanzibar in 1964, uses a Decimal Currency based on units of shillings and pence.



## Zambia

Zambian coinage consists of 20, 10 and 5 Ngwee pieces, 100 Ngwee being equal to 1 Kwacha. All coins are silver.



## Ghana

Formerly the Gold Coast until 1957, Ghana's coinage consists of the Pesewa, in denominations of 1, 5 and 10.



## Canada

These coins are being produced on Coinmaster 1, 2 and 3 machines at the Royal Canadian Mint in Winnipeg.



## Malawi

Malawi, known as Nyasaland until 1964, introduced decimal currency in 1971. The Kwacha and Tambala replaced the old Pounds, Shillings and Pence.



## Singapore

The range of Singapore coins comprises 6 denominations from one Cent to one Dollar. The 5-Cent, 10-Cent, 20-Cent, 50-Cent and 1-Dollar coins are of cupro nickel and the 1-Cent piece of bronze. All have a common motif of paddy stalks on the reverse.



## Thailand

Currency of the present Thai monarchy comprises the satang and the baht in various denominations, coins depicting the King's Head on the reverse. Older units (before 1939, when the country was known as Siam) were the fuang, the tical and the att.



## West Germany

West Germany became an independent Federal Republic in 1949. Units of currency are the Pfennig and the Deutsche Mark, coins in circulation being mainly of Copper-Nickel, Brass-clad Steel and Silver.



## Sweden

Currency units are the Ore and the Krona. Coins in circulation are of silver, bronze and copper-nickel.



## Switzerland

Present-day Swiss coins, the Centime and the Franc, were originated when the country became a Confederated Republic in 1850.



## Philippines

Bought from Spain in 1898 by America, the Philippines were recognised as an independent nation in 1946. Present-day currency units are the Peso and Centavo, these replacing the old Spanish Centimos, Quartos and Reals.



## Australia

In 1966 Australia adopted a new Decimal system, currency being converted from Pounds, Shillings and Pence to Dollars and Cents. Six coins were introduced from the 1-Cent piece to the 50-Cent piece.



## India

Specially modified feed unit components permit the production of scalloped coins on Coinmaster machines.

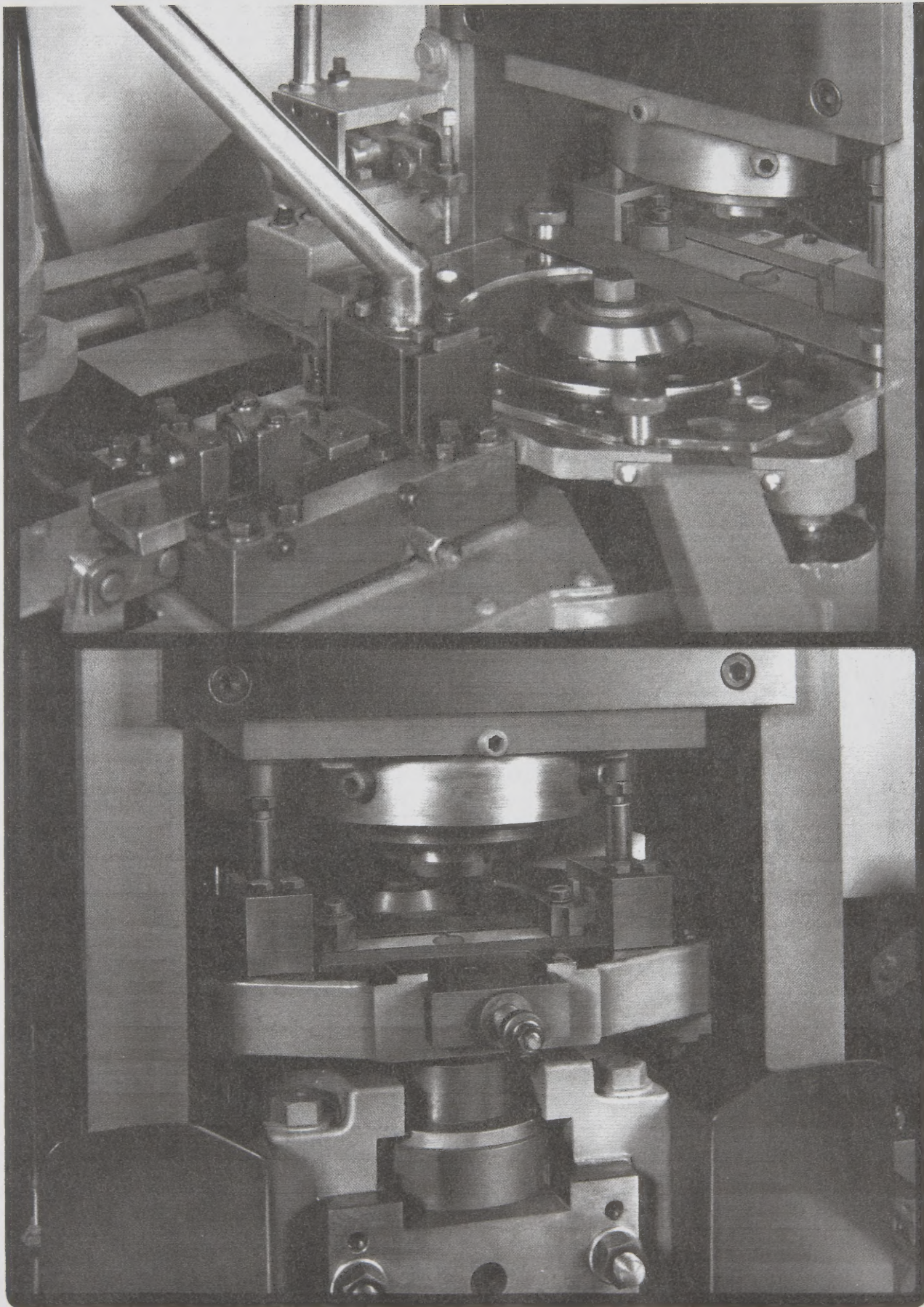


## Great Britain

First envisaged in 1851, the idea of decimal currency was finally adopted in 1966. Changeover took place in February 1971, and the Royal Mint, with the help of Coinmaster Minting Machines, produced 6500 million new









# Coinmaster Features

## Dial Feed

HME's dial feed system assures fast, positive component handling from blank loading right through to ejection of the finished coin. Blanks are gravity fed via a tube from which a finger loads them into the dial plate slots, one at a time. The dial plate indexes to feed blanks to the tooling area and, after the coining operation, to an unloading chute. Protection for both the machine and the costly dies is afforded by sensing devices which detect "no blank" or "double blank" misfeeds.

The complete feed system is designed for minimum wear. Using hardened and ground gears, with these and all other parts in the drive casing being oil immersed, the arrangement promotes a long, trouble-free working life.

## Accessible Tooling

Coinmaster Minting Machines are designed for simplified operation and setting. The photograph shows the front of the working area with the upper and lower tools and the dial plate clearly visible. The dial plate can be quickly changed to accommodate different components.

Tool changeovers can be accomplished in a matter of minutes – the bottom tool slides out to the front of the machine to enable a new die to be quickly inserted and securely locked in position. All units requiring adjustment during operation are conveniently grouped at the front of the machine to reduce down time to an absolute minimum.

# Standard and Extra Cost Equipment

## Knuckle Press

### Standard Equipment

(Supplied with the machine)

Complete Electrical equipment for 400–440 volts, 3 phase, 50 cycle supply. Includes B.S.S. totally enclosed fan cooled motor and remotely controlled interior contactor.

Complete Electrical control gear and wiring including a selector switch for:

- (a) Single Stroke;
- (b) Continuous Run;
- (c) Inch.

Controls also include Push Button for hand control, Electric control pedal, Top Stop Button, Emergency Stop, Motor Stop and Start, Oil Warning light.

Tonnage Indicator.

Tee Bolts and Clamps.

Slide Balance.

Lubricating Oil.

### Additional Equipment

(Not included in price of Standard Machine).

Electrical Equipment to suit non-standard A.C. supply, or unusual climatic conditions.

Bottom Ejection.

Automatic Feeding Attachments (available depending upon component details).

Operator Guarding.

Foot Pedal.

## Coinmaster

### Standard Equipment

(Supplied with the machine)

Complete Electrical equipment for 400/440 volts, 3 phase, 50 cycles supply. Includes B.S.S. totally enclosed fan cooled motor, driving a variable speed unit.

Complete Electrical control gear and wiring contained within free standing console unit.

Controls include:  
Motor Run and Stop.  
Inch.

Variation on inch.

Selector switch with position for:

- Off
- Forward Inch
- Reverse Inch
- Single Stroke
- Continuous Run

Reset Button.

Fast and slow speed selector switch.  
Fault Finder (Clutch Circuit).

Warning lights include:

Motor Running } Green  
Inch }

Feed Overload }  
No Blank } Red  
Double Blank }  
Die Fault }

Top Stop  
Low Air Pressure  
Low Oil Pressure

Speed Indicator

Eighteen Station Dial Feed unit.

Slide Balance.

Lubricating Oil.

Top and Bottom Toolholders

Overload Clutch on Feed Drive.

Ejection Shutters to control coin during ejection stroke.

### Additional Equipment

(Not included in price of Standard Machine).

Electrical Equipment to suit non-standard A.C. supply, or unusual climatic conditions.

Stroke Counter.

Flywheel Brake.

Lighting Unit.

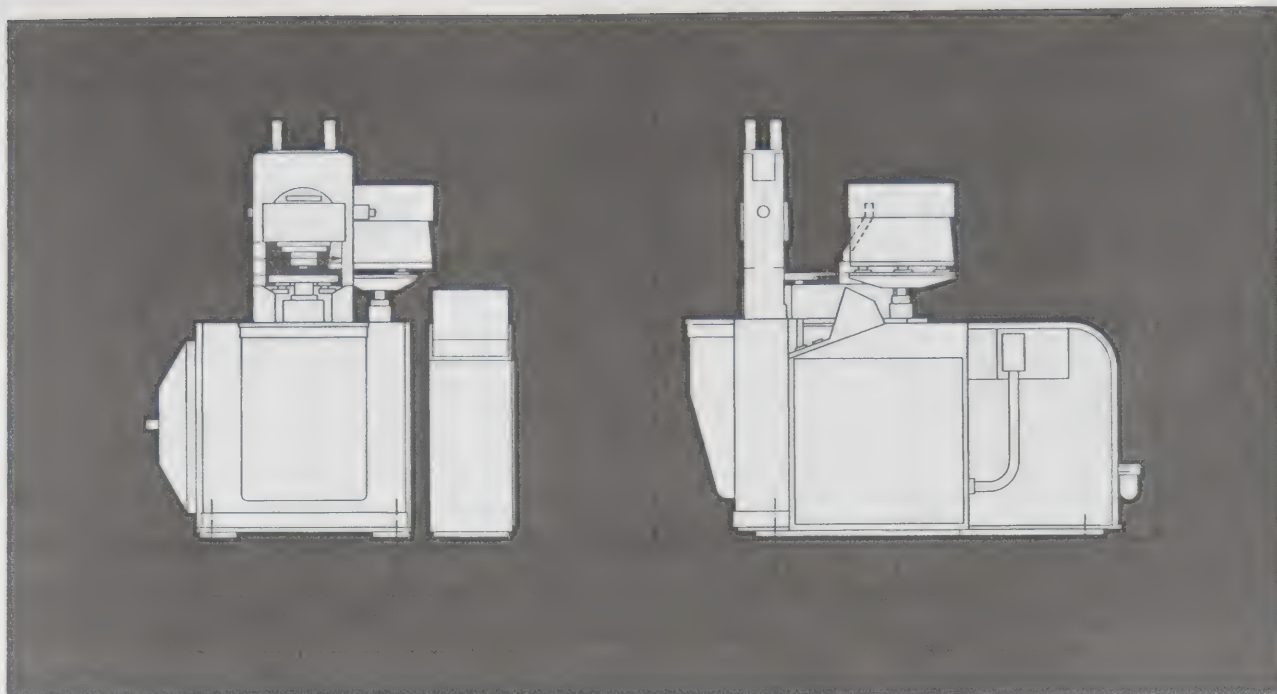
Vibratory Bowl Feeder.

Additional Dial Plates and Feed Chutes

Operator Guarding.

Note. The Design and Specifications of the Machines and Equipment described herein are subject to change.





## Coinmaster

Machine	A	B	C	D	E	F	G	H	J
Coinmaster 1 — Inches	16 $\frac{3}{4}$	5 $\frac{5}{8}$	8	12 $\frac{3}{4}$	8 $\frac{1}{2}$	31	33	36	3
— (mm)	(425)	(143)	(203)	(325)	(215)	(790)	(840)	(915)	(76)
Coinmaster 2 — Inches	20 $\frac{1}{8}$	5 $\frac{5}{8}$	8	14 $\frac{3}{4}$	11	36 $\frac{1}{2}$	38 $\frac{3}{8}$	41	3
— (mm)	(510)	(143)	(203)	(375)	(280)	(930)	(975)	(1040)	(76)
Coinmaster 3 — Inches	23 $\frac{1}{4}$	6 $\frac{7}{8}$	8	17 $\frac{1}{2}$	15	44	44 $\frac{1}{2}$	48	3
— (mm)	(590)	(174,5)	(203)	(445)	(380)	(1120)	(1130)	(1220)	(76)

Machine	K	L	M	N	P	Q	R	S
Coinmaster 1 — Inches	14	73	6 $\frac{3}{4}$	70	36	30	52 $\frac{1}{2}$	35 $\frac{3}{4}$
— (mm)	(355)	(1855)	(175)	(1780)	(915)	(765)	(1335)	(910)
Coinmaster 2 — Inches	14	80	8	76 $\frac{1}{2}$	39 $\frac{1}{2}$	30	59	39
— (mm)	(355)	(2035)	(205)	(1945)	(1005)	(765)	(1500)	(990)
Coinmaster 3 — Inches	14	84	12 $\frac{1}{4}$	89	45	30	64 $\frac{3}{4}$	44
— (mm)	(355)	(2135)	(318)	(2260)	(1145)	(765)	(1645)	(1120)

Specification		Coinmaster 1	Coinmaster 2	Coinmaster 3
Stroke —	Inches	$\frac{7}{8}$	1	1 $\frac{1}{2}$
—	(mm)	(22)	(25,4)	(38)
Top tool adjustment —	Inches	$\frac{1}{2}$	$\frac{7}{16}$	$\frac{9}{16}$
—	(mm)	(13)	(14,5)	(14,5)
Maximum coin diameter —	Inches	1 $\frac{1}{8}$	1 $\frac{5}{16}$	1 $\frac{3}{4}$
—	(mm)	(28,5)	(33,5)	(44,5)
Dial plate pitch circle diameter —	Inches	9 $\frac{3}{4}$	9 $\frac{3}{4}$	12
—	(mm)	(250)	(250)	(305)
Stations in dial plate		18	18	18
Feed height above bed —	Inches	8	8	8
—	(mm)	(203)	(203)	(203)
Ejection stroke —	Inches	0 — 0.185	0 — 0.25	0 — 0.25
—	(mm)	(0 — 4,699)	(0 — 6,35)	(0 — 6,35)
Variable speed		100 — 300	100 — 200	60 — 120
Main motor —	H.P. at synchronous speed	5 $\frac{1}{2}$ h.p. — 1,500 r.p.m.	7 $\frac{1}{2}$ h.p. — 1,500 r.p.m.	15 h.p. — 1,500 r.p.m.
—	(K.W.) at synchronous speed	(4,1) — 1,500 r.p.m.	(5,6) — 1,500 r.p.m.	(11,2) — 1,500 r.p.m.
Net weight		3 Ton 5 Cwt. (3300 Kg)	4 Ton (6750 Kg)	7 Ton 8 Cwt. (7500 Kg)













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